

A taxonomic study of the genus *Metiochodes* Chopard from China (Orthoptera, Gryllidae, Trigonidiinae)

KAI LI,^{1,3} ZHUQING HE,¹ & XIANWEI LIU²

¹ School of Life Science, East China Normal University, Shanghai, 200062, China. E-mail: kaili@admin.ecnu.edu.cn

² Shanghai Entomological Museum, Chinese Academy of Science, Shanghai, 200032, China. E-mail: liuxianwei2008@163.com

³ Corresponding author

Abstract

A taxonomic study of the genus *Metiochodes* Chopard, 1893 from China is presented. Five species are described, including four new species. A key to species from China is given.

Key words: Orthoptera, Gryllidae, Trigonidiinae, *Metiochodes*, taxonomy, new species

Introduction

The genus *Metiochodes* was described by Chopard in 1931. There are fourteen species in the world including one species in China (Eades & Otte, 2010). In this paper, five species from China have been recognized, of which four species—*M. acutiparamerus* sp. nov., *M. minor* sp. nov., *M. tibeticus* sp. nov., *M. truncatus* sp. nov.—are described new to. The type specimens are deposited in East China Normal University, Biology of History Museum, HSNU and Shanghai Entomological Museum, IEAS.

Metiochodes Chopard, 1931

Metiochodes Chopard, 1931. Bull. Raffles Mus., No.6: 137; Chopard, 1932. Ark. Zool. 23A N:o 9: 13; Chopard, 1951. Rec. S. Aust. Mus. 4(9): 477; Chopard, 1968. In Beier [Ed.]. Orthopterorum Catalogus 12: 337; Chopard, 1969. In Sewell [Ed.]. The Fauna of India and the Adjacent Countries 2: 299; Otte, 1994. Orthoptera Species File 1: 42; Yin & Liu, 1995. Synopsis on the classification of Grylloidea and Gryllotalpoidea from China: 31 (English p. 186); Ingrisch & Garai, 2001. Esperiana 8: 759.

Type species: *Metiochodes flavescens* Chopard, 1931

Body small, slender. Vertex flattened, eyes mostly horizontal lengthened, 5th joint of maxillary palpi widen. Anterior tibiae with tympana on inner side. Hind tibia with three pairs of dorsal spurs and five apical spurs. Tegmen with pubescence, veins longitudinal and parallel in both sexes, wings developed. Male genitalia varied. Ovipositor short and curved, apical valves not broader than the stem, margins with acute teeth.

Key to species of *Metiochodes* from China

- | | | |
|---|---|-----------------------------------|
| 1 | Legs with black spots; tegmen darkened near Sc veins..... | 2 |
| - | Legs and tegmen without markings..... | 3 |
| 2 | 5th joint of maxillary palpi black; dorsal spurs of hind femora yellow; male genitalia with sharp apical lobes (Figs. 2–3)..... | <i>M. acutiparamerus</i> sp. nov. |
| - | 5th joint of maxillary palpi yellow; dorsal spurs of hind femora blackish; male genitalia with rounded apical lobes | |

- (Figs. 5–6) *M. minor* sp. nov.
- 3 Head as wide as fore margin of pronotum; fore margin of pronotum as wide as hind margin; male genitalia as in Figs. 10–11 *M. tibeticus* sp. nov.
- Head much wider than fore margin of pronotum; pronotum distinctly narrowing in front 4
- 4 Male genitalia with hook-shaped apical lobes (Fig. 14) *M. flavescentis* Chopard, 1931
- Male genitalia with truncated apical lobes (Figs. 16–17) *M. truncatus* sp. nov.

1. *Metiochodes acutiparamerus* sp. nov.

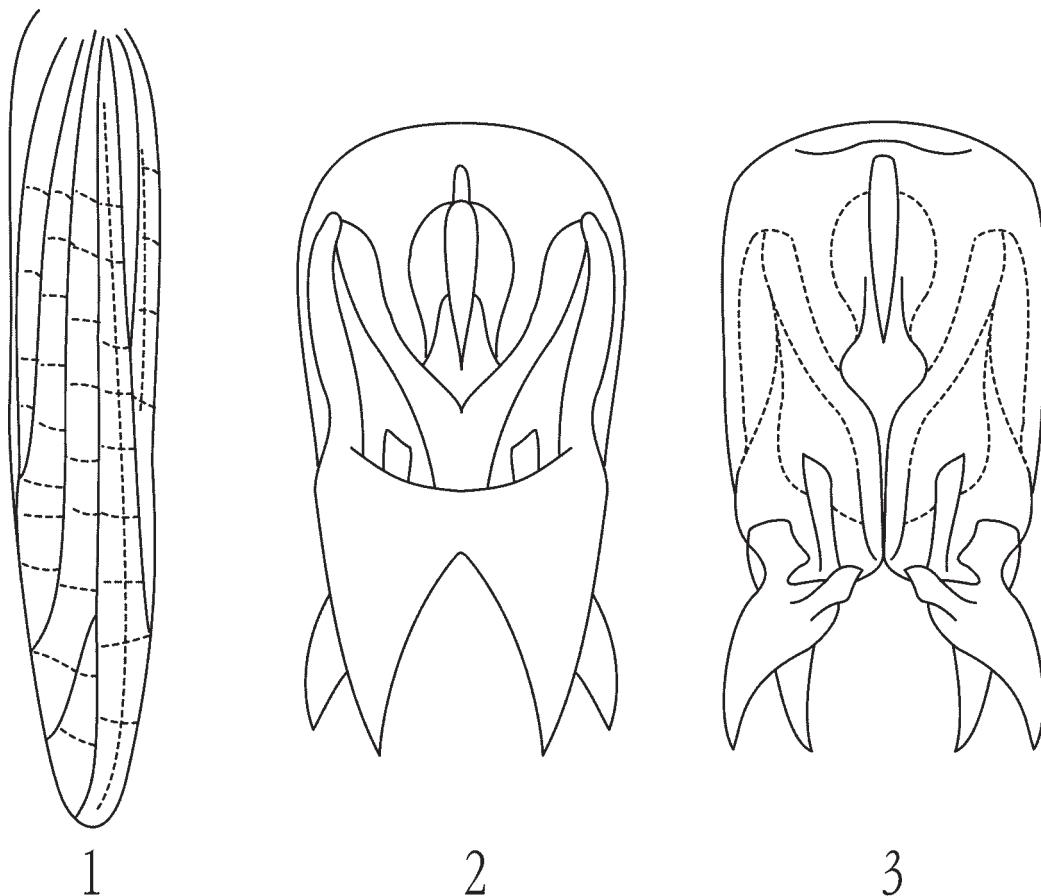
(Figs. 1–3)

Material. Holotype ♂, CHINA: Hainan prov. Ledong county, Jianfengzhen, 2009.VII.18, leg. He Zhu-Qing; Paratypes 1♂, same data as holotype (HSNU).

Description. Male. Body small. Head wider than fore margin of pronotum, vertex flattened, eyes horizontal lengthened, frontal rostrum as wide as 1st antennal joint, 5th joint of maxillary palpi triangular. Pronotum transverse, narrowing in front, fore margin slightly convex and hind margin undulated, a couple of crescent on disc. Fore tibia with a rather large, oval tympanum on inner side. Hind tibia with three pairs of dorsal spurs and five apical spurs. Tegmen long, exceeding to apex of abdomen, rather feebly pubescent; veins of dorsal field as in Fig. 1. Wings developed. Male genitalia with sharp apical branches (Figs. 2–3).

Female. unknown.

Coloration. Body yellow. Eyes and 5th joint of maxillary palpi black, tegmen darkened near Sc veins, median and hind femora with a small black spot, all tibiae with a black line.



FIGURES 1–3. *Metiochodes acutiparamerus* sp. nov. 1. tegmen of male; 2. genitalia of male, dorsal view; 3. genitalia of male, ventral view.

Measurements. (in mm) Body ♂ 5.5–6.0; body with wing ♂ 9.0; pronotum ♂ 0.7–0.8; tegmen ♂ 4.5; posterior femur ♂ 4.2–4.3.

Distribution. China (Hainan).

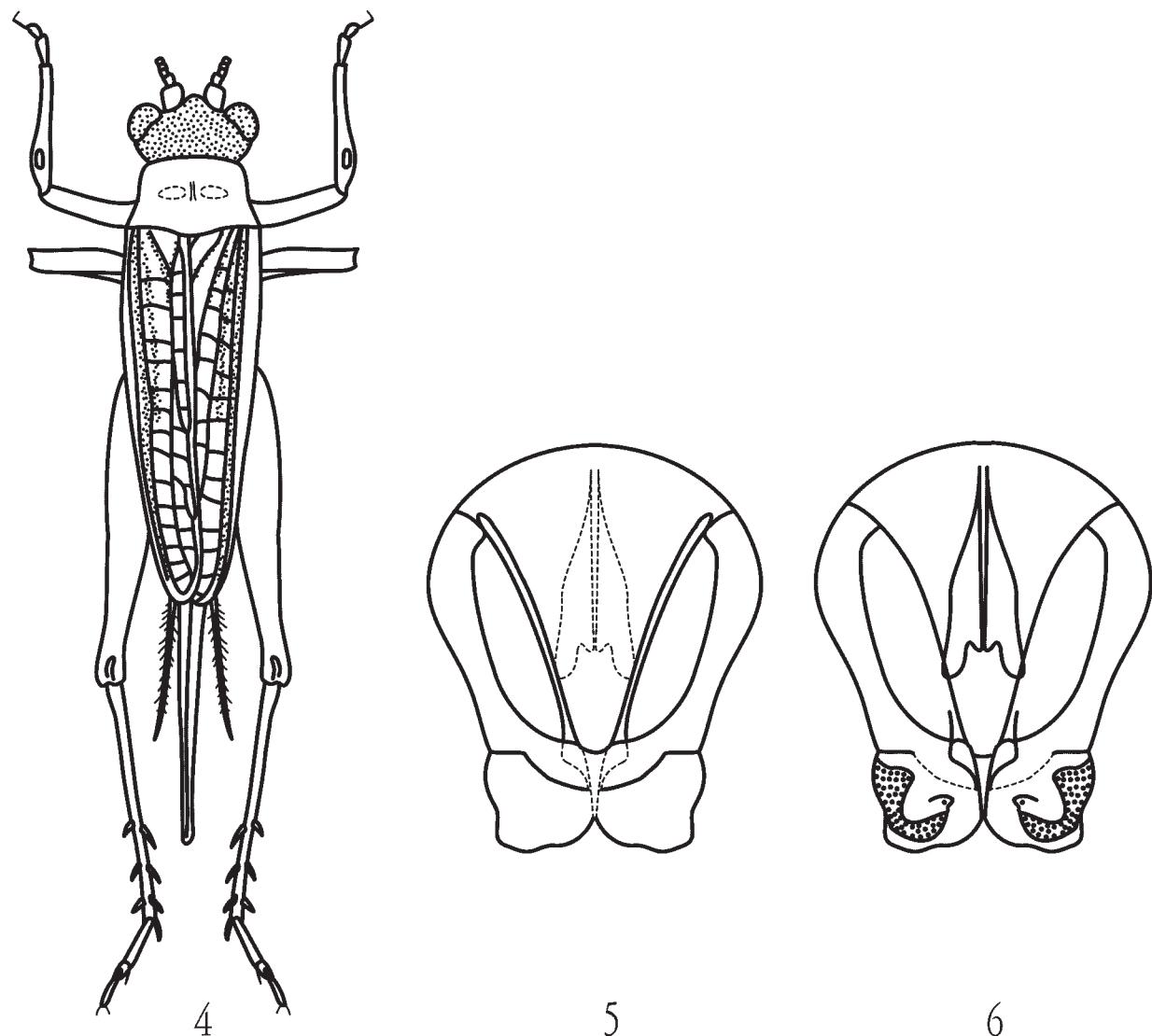
Etymology. The new specific name is derived from Latin *acutus*+*paramerus*, meaning sharp apical branches.

Discussion. Similar to *M. flavesiensis* Chopard, 1931, but new species with 5th joint of maxillary palpi black, legs with black spots and lines, differs in shape of male genitalia.

2. *Metiochodes minor* sp. nov.

(Figs. 4–6)

Material. Holotype ♂, CHINA: Fujian prov. Sanming county, Mingxi Longkeng, 2008.VIII.8, leg. He Zhu-Qing; Paratypes 1♂, same data as holotype (HSNU).



FIGURES 4–6. *Metiochodes minor* sp. nov. 4. body of male; dorsal view; 5. genitalia of male, dorsal view; 6. genitalia of male, ventral view.

Description. Male. Body small. Head wider than fore margin of pronotum, vertex flattened, eyes horizontal lengthened, frontal rostrum as wide as 1st antennal joint, 5th joint of maxillary palpi triangular. Pronotum transverse, narrowing in front, fore margin slightly convex and hind margin undulated, a couple of crescent on disc. Fore tibia with a rather large, oval tympanum on inner side. Hind tibia with three pairs of

dorsal spurs and five apical spurs. Tegmen long, exceeding to apex of abdomen, rather feebly pubescent; veins of dorsal field as in Fig. 4. Wings developed. Male genitalia with obtusely rounded apical lobes (Figs. 5–6).

Female. unknown.

Coloration. Body yellow. Head brown, tegmen darkened near Sc veins, each fore femur and tibia with a black line, dorsal spurs of hind femora blackish.

Measurements. (in mm) Body ♂ 5.5; Body with wing ♂ 8.2–8.5; pronotum ♂ 0.7–0.8; tegmen ♂ 4.3–4.5; posterior femur ♂ 4.0.

Distribution. China (Fujian).

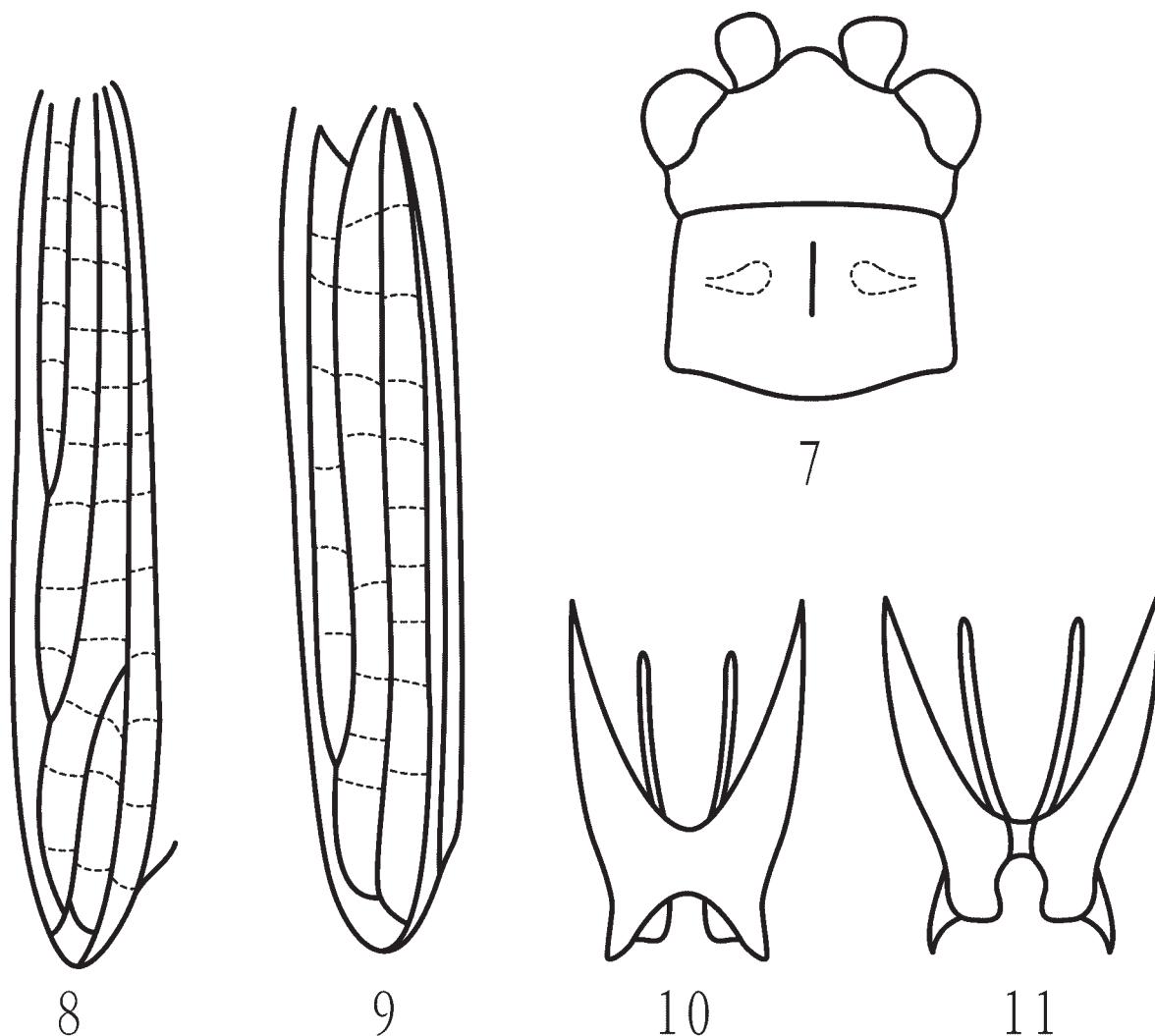
Etymology. The new specific name is derived from Latin minor, meaning body small.

Discussion. Similar to *Metiochodes acutiparamerus* sp. nov., but differ in apical joint of maxillary palpi yellow; dorsal spurs of hind femora blackish; male genitalia with rounded apical branches.

3. *Metiochodes tibeticus* sp. nov.

(Figs. 7–11)

Metiochodes greeni Yin & Liu, 1995. Synopsis on the Classification of Grylloidea and gryllotalpoidea from China: 31–32 (nec Chopard, 1925)



FIGURES 7–11. *Metiochodes tibeticus* sp. nov. 7. head and pronotum; dorsal view; 8. dorsal field of male tegmen; 9. dorsal field of female tegmen; 10. genitalia of male, dorsal view; 11. genitalia of male, ventral view.

Material. Holotype ♂, CHINA: Xizang prov. Motuo county, Maniwen, Alt. 1050m, 1979.VIII.4, leg. Jin Gen-Tao, Wu Jian-Yi; Paratypes 1♀, CHINA: Xizang prov. Motuo county, Maniwen, Alt. 1310m, 1980.VI.13, leg. Jin Gen-Tao, Wu Jian-Yi (IEAS).

Description. Male. Body small. Head as wide as the fore margin of pronotum, vertex flattened, eyes horizontal lengthened, frontal rostrum as wide as 1st antennal joint, 5th joint of maxillary palpi triangular. Pronotum transverse, with almost parallel sides, fore margin slightly convex and hind margin undulate, a couple of crescent on disc. Fore tibia with a rather large, oval tympanum on inner side. Hind tibia with three pairs of dorsal spurs and five apical spurs. Tegmen long, exceeding to apex of abdomen, rather feebly pubescent; veins of dorsal field as in Fig. 8. Wings developed. Male genitalia as in Figs. 10–11.

Female. Veins of tegmen as in Fig. 9. Ovipositor short and slightly curved, with apical valves occupying half total length, finely denticulate.

Coloration. Body yellow with head darkened.

Measurements. (in mm) Body ♂ 6.5; body with wing ♂ 9.5, ♀ 10.0; pronotum ♂ 1.0, ♀ 0.8; tegmen ♂ 5.0, ♀ 4.0; posterior femur ♂ 4.8, ♀ 4.0; ovipositor ♀ 1.5.

Distribution. China (Xizang).

Etymology. The new species is named after its locality Tibet (Xizang).

Discussion. Similar to *M. greeni* (Chopard, 1925), but differ in the head darkened, fore tibiae without external tympanum, male genitalia with acute apical lobes and ovipositor short.

4. *Metiochodes flavescens* Chopard, 1931

(Figs. 12–14)

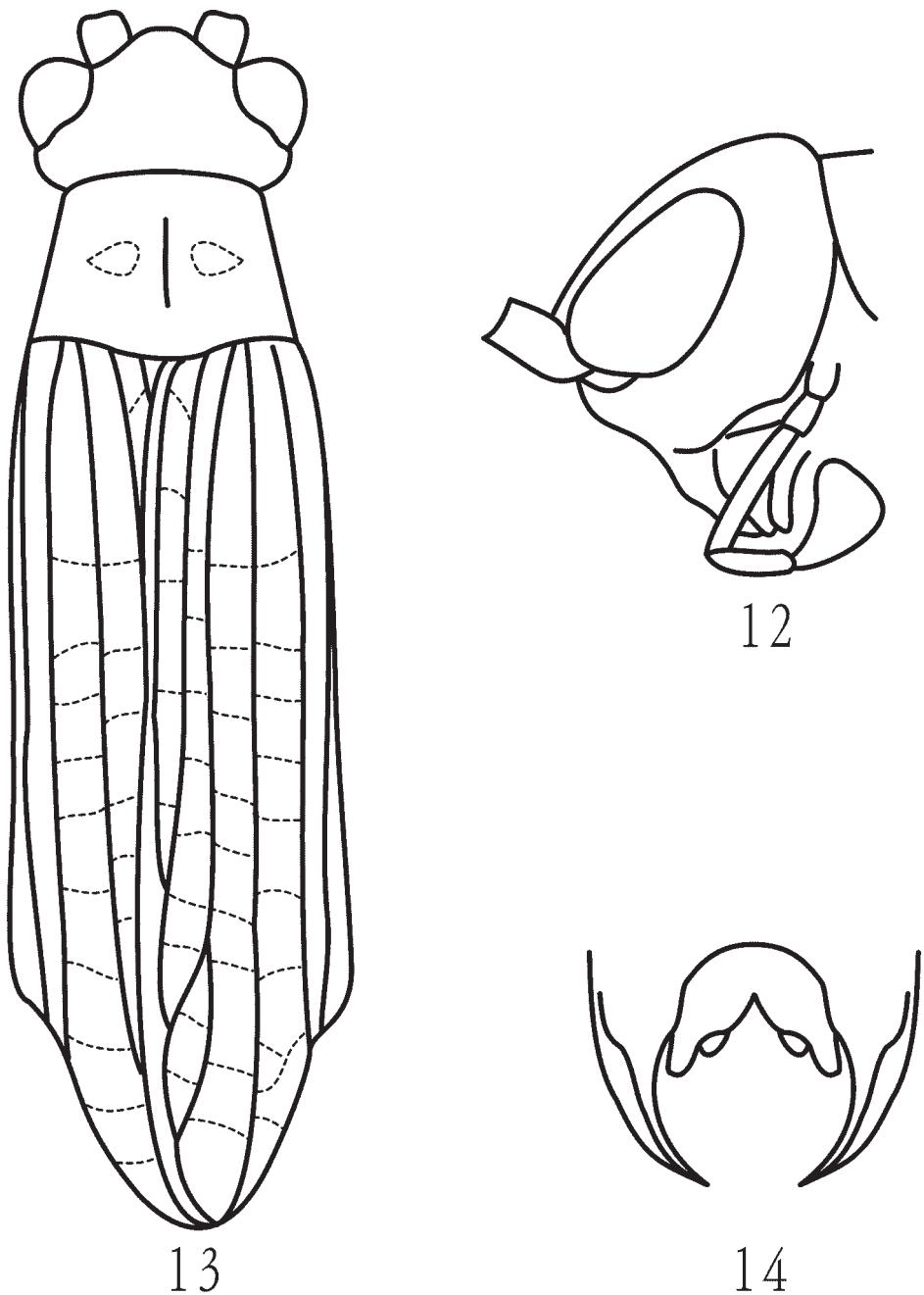
Metiochodes flavescens Chopard, 1931. Bull. Raffles Mus., No.6: 137; Chopard, 1932. Ark. Zool. 23A N:o 9: 13; Chopard, 1936. Ceyl. J. Sc., (B) 20: 49, fig. 9b; Chopard, 1968. In Beier [Ed.]. Orthopterorum Catalogus 12: 337; Chopard, 1969. In Sewell [Ed.]. The Fauna of India and the Adjacent Countries 2: 289; Gorochov, 1987. In Medvedev [Ed.]. Insects fauna of Vietnam: 14.

Material. 1♀, CHINA: Yunnan prov. Xishuangbannajinuo 1995.VIII.5–9, leg. Liu Xian-Wei, Zhang Wei-Nian, Jin Xin-Bao (IEAS).

Diagnosis. Body small; dark yellow or reddish yellow. Head much wider than fore margin of pronotum, vertex flattened, eyes horizontal lengthened as in Fig. 12. Pronotum rather strongly narrowing in front. Each fore tibia with a rather large, oval tympanum on inner side, tegmen with 5 longitudinal veins on dorsal field (Fig. 13). Male genitalia with hooks shaped apical branches (Fig. 14).

Measurements. (in mm) Body ♀ 6.5; body with wing ♀ 10.5; pronotum ♀ 1.0; tegmen ♀ 5.5; posterior tibiae ♀ 4.8; ovipositor 2.5.

Distribution. China (Yunnan); Thailand; Singapore; Malaya; Indonesia.



FIGURES 12–14. *Metiochodes flavescens* Chopard, 1931. 12. head of female, lateral view; 13. head, pronotum and tegmen of female, dorsal view; 14. apex of male genitalia, dorsal view (from Chopard, 1936).

5. *Metiochodes truncatus* sp. nov.

(Figs. 15–17)

Material. Holotype ♂, CHINA: Yunnan prov. Jinping county, Menglawendang, Alt. 850m, 2009.V.26, leg. Liu Xian-Wei, Wu Jie, Zhu Wei-Bing, Bi Wen-Xuan; Paratypes 1♂, same data as holotype (IEAS).

Description. Male. Body small. Head wider than fore margin of pronotum (Fig. 15), vertex flattened, eyes horizontal lengthened, frontal rostrum as wide as 1st antennal joint, 5th joint of maxillary palpi triangular. Pronotum transverse, feebly narrowing in front, fore margin slightly convex and hind margin undulate, a

couple of crescent on disc. Fore tibia with a rather large, oval tympanum on inner side. Hind tibia with three pairs of dorsal spurs and five apical spurs. Tegmen long, exceeding to apex of abdomen, rather feebly pubescent; 5 longitudinal veins of dorsal field very regular, straight. Wings developed. Male genitalia with truncate apical lobes (Figs. 16–17).

Female. unknown.

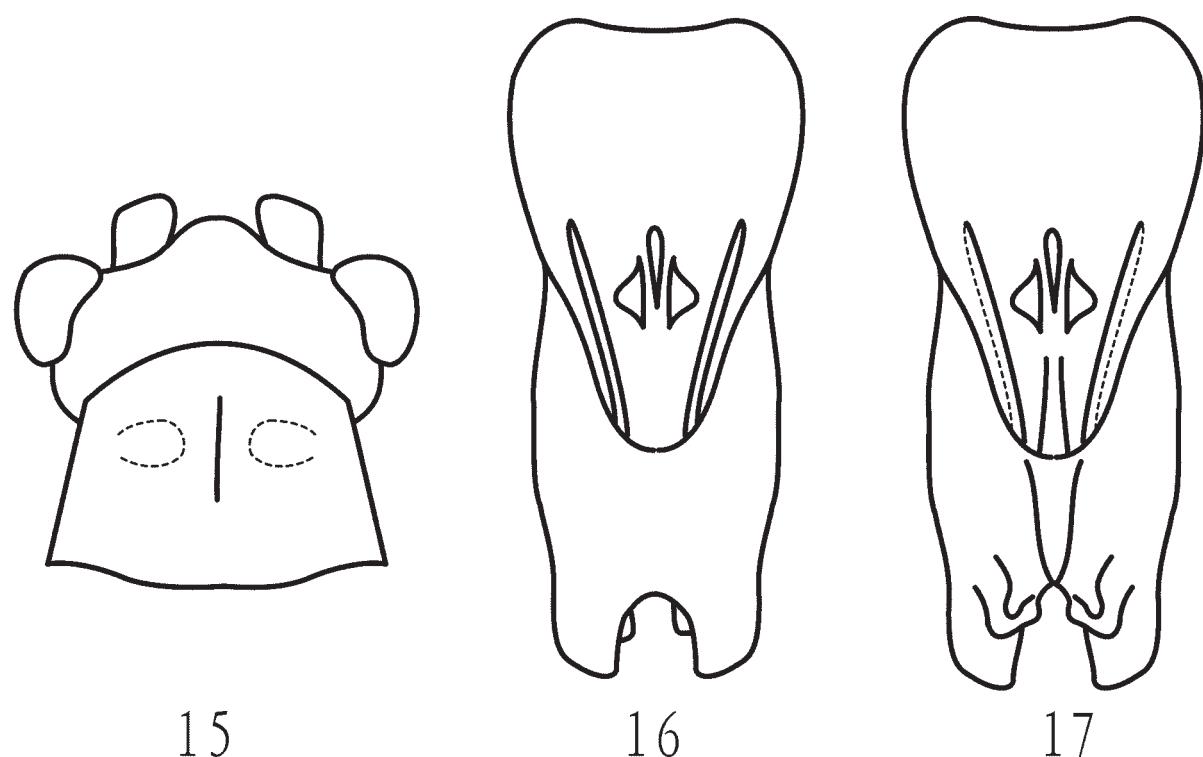
Coloration. Body light yellow.

Measurements. (in mm) Body ♂5.5; body with wing ♂9.0; pronotum ♂1.0; tegmen ♂4.8; posterior femur ♂4.8.

Distribution. China (Yunnan).

Etymology. The new specific name is derived from Latin truncatus, meaning truncate apical lobes.

Discussion. Similar to *M. flavescent* Chopard, 1931, but differ in the body color light yellow and male genitalia with truncate apical lobes.



FIGURES 15–17. *Metiochodes truncates* sp. nov. 15. head and pronotum; dorsal view; 16. genitalia of male, dorsal view; 17. genitalia of male, ventral view.

Acknowledgment

We thank Jin Gen-Tao, Wu Jian-Yi, Zhang Wei-Nian, Jin Xin-Bao, Wu Jie, Zhu Wei-Bing, Bi Wen-Xuan for their collections. This work was supported by the Shanghai Rising-Star Program (No. 10QH1400700), Shanghai Natural Science Foundation (No. 10ZR1408500).

References

- Chopard, L. (1931) On Gryllidae from the Malay Peninsula. *Bulletin Raffles Museum*, 6, 124–149.
Chopard, L. (1932) Dr. E. Mjoberg's zoological collections from Sumatra. 12. Gryllidae. *Arkiv For Zoologi*, 23, 1–17.
Chopard, L. (1936). The Tridactylidae and Gryllidae of Ceylon. *Spolia Zeylanica (Bulletin Nature Museum Ceylon)* Section B, 20, 9–87.

- Chopard, L. (1951) A revision of the Australian Grylloidea. *South Australia Museum*, 9, 387–533.
- Chopard, L. (1968) Gryllidae Fam. Gryllidae: Subfam. Mogoplistinae, Myrecophilinae, Scleropterinae, Cachoplistinae, Pteroplistinae, Pentacantrinae, Phalangopsinae, Trigonidiinae, Eneopterinae; Fam. Oecanthidae, Gryllotalpidae. In: Beier, (Ed.), *Orthopterorum Catalogus. Vol. 12*. Uitgeverij Dr. W. Junk N. V., Gravenhage, pp. 215–500.
- Chopard, L. (1969) Orthoptera Volume 2 Grylloidea. In: Sewell, R.B.S. (Ed.), *The Fauna of India and the Adjacent Countries*. Baptist Mission Press, Calcutta, pp. 1–421.
- Eades, D.C. & Otte, D. (2010) *Orthoptera Species File Online*. Version 2.0/3.5 <<http://Orthoptera.SpeciesFile.org>>
- Gorochov, A.V. (1987) On the fauna of crickets of the subfamily Gryllinae (Orthoptera, Gryllidae) of eastern Indochina. In: Medvedev, L.N. (Ed.), *Insect Fauna of Vietnam*. Nauka, Moscow, pp. 5–17.
- Yin, H.S. & Liu, X.W. (1995) *Synopsis on the Classification of Grylloidea and Gryllotalpoidea from China*. Shanghai Scientific and Technological Literature Publishing House, Shanghai, 237pp.